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A.D. 1887, 20*th* AUGUST. N° 11,393.

PROVISIONAL SPECIFICATION.

An Improved Deodorizing, Decolorizing, and Filtering Medium.

We OWEN BOWEN of 66 Mark Lane in the City of London, Civil Engineer, and JOHN COBELDICK of St. Piran's, Stockwell Green, in the County of Surrey, Surveyor do hereby declare the nature of this invention to be as follows :—

This invention relates to an improved medium for use in filtering and deodorizing sewage, decolorizing dye waste, and for filtering purposes generally.

In carrying out this invention, we make use of the shale to be found in the limestone quarries at Lyme Regis in Dorsetshire, and we mix it with ironstone and bituminous coal or coke, and calcine the mass in a kiln or retort.

The proportions of the several materials are as follows :—Shale, 65 parts by weight ; ironstone or ore, 25 parts ; and bituminous coal or coke, 15 parts. The calcining may be effected readily in a kiln of the kind used for burning lime, and the materials may be arranged in layers in the kiln. The temperature may vary from 900 to 1200 degrees, and the calcining will usually be effected in from 4 to 6 hours. When sufficiently burnt, the mass is allowed to cool down, and the kiln is then drawn ; the material is then crushed in a suitable crushing mill, and is ready for use.

We prefer to crush the material to such an extent that the largest pieces shall be about the size of a hazel nut, and the finest, dust.

In laying a filter bed, we place the largest at the bottom and the dust at the top, and we cover the dust with perforated malting tiles.

The filtration we prefer should be upward, especially in the case of sewage, the tanks for which will be suitably constructed for the purpose.

The ironstone we find most useful for our purpose is that obtained in the Wellingborough district of Northamptonshire, as it contains a large quantity of alumina, with a large proportion of per-oxide of iron.

To revivify the spent medium, we recalcine it with the addition of a fresh supply of the mixture of shale, ironstone, and coal, the proportions being about $\frac{1}{3}$rd of fresh material to about $\frac{2}{3}$rds of the spent medium.

Dated this 20th day of August 1887.

NEWTON & SON,
Agents for the Applicants.

[*Price* 6*d*.]

COMPLETE SPECIFICATION.

An Improved Deodorizing, Decolorizing, and Filtering Medium.

We OWEN BOWEN of 66 Mark Lane in the City of London, Civil Engineer, and JOHN COBELDICK of St. Piran's, Stockwell Green in the County of Surrey, Surveyor do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention relates to an improved medium for use in filtering and deodorizing sewage, decolorizing dye waste, and for filtering purposes generally.

In carrying out this invention, we make use of the shale to be found in the limestone quarries at Lyme Regis in Dorsetshire, and we combine it with ironstone and bituminous coal or coke, and calcine the mass in a kiln or retort.

The ironstone we find best suited for our purpose is that obtained in the Wellingborough district of Northamptonshire, as it contains a large quantity of alumina, with a considerable proportion of peroxide of iron.

The proportions of the several materials which we have found to give most satisfactory results are as follows :—

Shale - - - - - -	60 parts by weight
Ironstone or ore - - - -	25 parts, and
Bituminous coal or coke - - -	15 parts.

The calcining may be effected readily in an ordinary lime kiln, and the materials we arrange in layers in the kiln. The temperature at which the calcining is usually effected varies from 900 to 1200 degrees Fahr., and the operation lasts from 4 to 6 hours according to the temperature, that is to say, at the higher temperature the calcining is effected in the shorter time, and *vice versa*. When properly burnt, the mass is allowed to cool down in the kiln, which is then drawn. The material is finally crushed in a suitable crushing mill, and is ready for use.

We prefer to crush the material to such an extent that the largest pieces shall be about the size of a hazel nut, and the finest, dust.

In laying a filter bed, we place the largest sized pieces at the bottom, and the dust at the top, and we cover the dust preferably with perforated malting tiles.

The filtration we find is most useful in an upward direction, especially in the case of sewage, the tanks for which will be suitably constructed for the purpose. This, however, forms no part of our invention.

To revivify the spent medium, we recalcine it with the addition of a fresh supply of the mixture of shale, ironstone, and coal, the proportions being about $\frac{1}{3}$rd of fresh material to about $\frac{2}{3}$rds of the spent medium.

We would here remark that we do not confine ourselves to the use of the ironstone mentioned above, as other ironstones containing a greater or less per centage of iron may be employed, the proportion of shale being increased or diminished as required.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

The improved deodorizing, decolorizing, and filtering material herein described, and consisting of Lyme Regis shale, ironstone or ore, and bituminous coal or coke, in or about the proportions given, calcined and crushed as set forth.

Dated this 8th day of May 1888.

NEWTON & SON,
Agents for the Applicants.

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